

WHAT IS CLAIMED IS:

1. A film-forming composition comprising:
 - a water-soluble or water-dispersible vinyl polymer comprising amine group-containing side-chains and a copolymerized hydrophobic monomer;
 - 5 wherein the amine equivalent weight of the polymer is at least about 300 grams polymer per equivalent of amine group;
 - water; and
 - a surfactant;

wherein the composition possesses at least one of the following

 - 10 characteristics:
 - the polymer is present in an amount greater than the surfactant;
 - or
 - a dry film of the composition is substantive.
- 15 2. The composition of claim 1 further comprising an active agent.
3. The composition of claim 2 wherein the active agent comprises an antimicrobial agent, a pharmaceutical, or a cosmetic agent.
- 20 4. The composition of claim 3 wherein the active agent comprises an iodophor, iodine, chlorhexidine, chlorhexidine salts, fatty acid monoesters of glycerin and propylene glycol, chlorinated phenols, triclosan, octenidine, or mixtures thereof.
- 25 5. The composition of claim 4 wherein the active agent is iodine or an iodophor.
6. The composition of claim 2 wherein the ratio of vinyl polymer to active agent is about 0.25:1 to about 5:1.
- 30 7. The composition of claim 1 wherein the amine equivalent weight of the polymer is no greater than about 3000 grams polymer per equivalent of amine group.

8. The composition of claim 1 wherein the surfactant is a nonionic surfactant.

5 9. The composition of claim 8 wherein the nonionic surfactant has an HLB of at least about 14.

10. The composition of claim 9 wherein the nonionic surfactant has an HLB or no greater than about 19.

10 11. The composition of claim 10 further comprising a surfactant having an HLB of less than about 14 or greater than about 19.

15 12. The composition of claim 8 further comprising an anionic or amphoteric surfactant.

13. The composition of claim 12 where the anionic or amphoteric surfactant is selected from the group consisting of sulfates, sulfonates, phosphates, phosphonates, ammonium sulfonate amphoteric, and mixtures thereof.

20 14. The composition of claim 1 wherein the surfactant is an amine oxide surfactant.

25 15. The composition of claim 1 wherein the surfactant is an anionic surfactant.

16. The composition of claim 1 further comprising a hydroxycarboxylic acid buffer.

30 17. The composition of claim 16 wherein the hydroxycarboxylic acid buffer comprises an alpha-hydroxycarboxylic acid.

18. The composition of claim 17 wherein the hydroxycarboxylic acid buffer comprises lactic acid, malic acid, citric acid, or a mixture thereof.

19. The composition of claim 1 wherein the composition has a Brookfield 5 viscosity of no greater than about 1000 cps.

20. The composition of claim 1 wherein the vinyl polymer has a glass transition temperature of at least about 30°C.

10 21. The composition of claim 20 wherein the vinyl polymer has a glass transition temperature of at least about 50°C.

22. The composition of claim 1 further comprising a polymer having a higher Tg than that of the vinyl polymer having amine groups.

15 23. The composition of claim 22 wherein the polymer having a higher Tg than that of the vinyl polymer having amine groups is polyvinyl alcohol.

24. The composition of claim 1 wherein the composition is stable.

20 25. The composition of claim 1 having a flashpoint of greater than about 60°C measured according to test method ASTM D3278-96.

26. The composition of claim 1 wherein the amine groups are selected from 25 the group consisting of quaternary ammonium groups, protonated tertiary amine groups, amine oxide groups, and combinations thereof.

27. The composition of claim 1 having a dry time of no greater than about 2 minutes.

30 28. The composition of claim 1 wherein the surfactant is a silicone copolyol surfactant.

29. The composition of claim 1 wherein a dry film of the composition is substantially nontacky.

30. The composition of claim 1 further comprising a (C1-C4)alcohol.

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31. A film-forming composition comprising:

a water-soluble or water-dispersible vinyl polymer comprising amine group-containing side-chains and a hydrophobic monomer; wherein the amine equivalent weight of the polymer is about 300 grams to about 3000 grams

10 polymer per equivalent of amine group;

an active agent;

water; and

a surfactant;

wherein the composition possesses at least one of the following

15 characteristics:

the polymer is present in an amount greater than the surfactant;

or

a dry film of the composition is substantive.

20 32. The composition of claim 31 wherein the active agent is an antimicrobial agent.

33. The composition of claim 31 wherein the composition possesses two or more of the following characteristics:

25 the polymer is present in an amount greater than the surfactant;
the polymer to active agent weight ratio is at least about 0.25:1; or
a dry film of the composition is substantive.

34. The composition of claim 33 wherein the composition possesses all of
30 the following characteristics:

the polymer is present in an amount greater than the surfactant;
the polymer to active agent weight ratio is at least about 0.25:1; and
a dry film of the composition is substantive.

35. The composition of claim 31 wherein the vinyl polymer comprises dimethylamine oxide methacrylate, isobutyl methacrylate, methyl methacrylate, and a (C12-18)alkyl methacrylate.

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36. The compositions of claim 31 wherein the vinyl polymer comprises trimethylaminioethyl acrylate chloride, butyl acrylate, methyl methacrylate, and a (C12-18)alkyl methacrylate.

10 37. A film-forming composition comprising:

a water-soluble or water-dispersible vinyl polymer prepared from monomers comprising:

an amine group-containing monomer;

about 1 wt-% to about 30 wt-% of a (C6-C22)alkyl (meth)acrylic monomer; and

about 15 wt-% to about 75 wt-% of a (C1-C4)alkyl (meth)acrylic monomer;

wherein the amine equivalent weight of the polymer is about 300 to about 3000 grams polymer per equivalent of amine group;

20 water; and

an active agent.

38. The composition of claim 37 wherein the active agent comprises an antimicrobial agent, a pharmaceutical, or a cosmetic agent.

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39. The composition of claim 37 wherein the active agent comprises an iodophor, iodine, chlorhexidine, chlorhexidine salts, fatty acid monoesters of glycerin and propylene glycol, chlorinated phenols, triclosan, octenidine, or mixtures thereof.

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40. The composition of claim 39 wherein the active agent is iodine or an iodophor.

41. The composition of claim 37 wherein the amine equivalent weight of the polymer is no greater than about 1500 grams polymer per equivalent of amine group.

5 42. The composition of claim 37 further comprising a surfactant.

43. The composition of claim 42 wherein the surfactant is a nonionic, anionic, or amphoteric surfactant.

10 44. The composition of claim 43 where the anionic or amphoteric surfactant is selected from the group consisting of sulfates, sulfonates, phosphates, phosphonates, ammonium sulfonate amphoteric, and mixtures thereof.

45. The composition of claim 37 wherein the surfactant is an amine oxide surfactant.

15 46. The composition of claim 37 wherein the surfactant is an anionic surfactant.

20 47. The composition of claim 37 further comprising a hydroxycarboxylic acid buffer.

48. The composition of claim 37 wherein the composition is stable.

25 49. The composition of claim 37 wherein the amine groups are selected from the group consisting of quaternary ammonium groups, protonated tertiary amine groups, amine oxide groups, and combinations thereof.

50. A method of disinfecting tissue comprising:

30 applying a film-forming composition to tissue, wherein the film-forming composition comprises:

 a water-soluble or water-dispersible vinyl polymer comprising amine group-containing side-chains and a copolymerized hydrophobic

monomer; wherein the the polymer has an amine equivalent weight of at least about 300 grams polymer per equivalent of amine group;

water; and

a surfactant;

5 wherein the composition possesses at least one of the following characteristics:

the polymer is present in an amount greater than the surfactant; or

a dry film of the composition is substantive; and

10 allowing the film-forming composition to remain on the tissue.

51. The method of claim 50 wherein the composition further comprises an antimicrobial agent.

15 52. A method of delivering an active agent to tissue comprising: applying a film-forming composition to tissue, wherein the film-forming composition comprises:

a water-soluble or water-dispersible vinyl polymer comprising amine group-containing side-chains and a copolymerized hydrophobic

20 monomer; wherein the amine equivalent weight of the polymer is at least about 300 grams polymer per equivalent of amine group;

water; and

an active agent; and

allowing the film-forming composition to remain on the tissue.

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53. A method of delivering an active agent to tissue comprising: applying a film-forming composition to tissue, wherein the film-forming composition comprises:

a water-soluble or water-dispersible vinyl polymer comprising amine group-containing side-chains and a hydrophobic monomer;

30 wherein the amine equivalent weight of the polymer is about 300 grams to about 3000 grams polymer per equivalent of amine group;

an active agent;

water; and
a surfactant;
wherein the composition possesses at least one of the following characteristics:

5 the polymer is present in an amount greater than the surfactant; or

 a dry film of the composition is substantive; and
allowing the film-forming composition to remain on the tissue.

10 54. A method of claim 53 wherein the active agent is an antimicrobial agent.

55. A method of delivering an active agent to tissue comprising:
applying a film-forming composition to tissue, wherein the film-forming composition comprises:

15 a water-soluble or water-dispersible vinyl polymer prepared from monomers comprising:

 an amine group-containing monomer;
 about 1 wt-% to about 30 wt-% of a (C6-C22)alkyl (meth)acrylic monomer; and

20 about 15 wt-% to about 75 wt-% of a (C1-C4)alkyl (meth)acrylic monomer;

 wherein the amine equivalent weight of the polymer is about 300 to about 3000 grams polymer per equivalent of amine group;
 water; and

25 an active agent; and

 allowing the film-forming composition to remain on the tissue.

56. A method of claim 55 wherein the active agent is an antimicrobial agent.

30 57. A method of making a film-forming composition, wherein the method comprises combining components comprising:

 a water-soluble or water-dispersible vinyl polymer comprising amine group-containing side-chains and a copolymerized hydrophobic monomer;

wherein the polymer has an amine equivalent weight of at least about 300 grams polymer per equivalent of amine group;

an active agent;

water; and

5 a surfactant.

58. The method of claim 57 wherein the active agent is in a buffered solution and subsequently the vinyl polymer and surfactant are added to the buffered active agent.

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59. A film-forming vinyl polymer comprising moieties derived from monoethylenically unsaturated monomers comprising a quaternary ammonium group-containing monomer and a (C8-C22)alkyl (meth)acrylic monomer; wherein the polymer in an aqueous solution at a concentration of 1 wt-%

15 exhibits at least a 50% reduction in antimicrobial activity against

Staphylococcus epidermidis ATCC strain number 12228 in 30 minutes.

60. The film-forming polymer of claim 59 wherein the polymer in an aqueous solution at a concentration of 1 wt-% exhibits at least a 75% reduction

20 in antimicrobial activity in 30 minutes.